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THE TREND OF MODERN GEOGRAPHY

A SYMPOSIUM

Conducted by G. B. ROORBACH
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There prevails a general impression, even among geographers themselves, that there is little or no agreement as to what geography is or what its purposes and problems are. It has been commonly said that there are as many definitions of geography as there are geographers; that the subject is not a distinct and separate science with a single aim and purpose. In an attempt to determine whether or not the diversity of opinion is as great as is commonly supposed and to gain an idea as to just what present-day geographers regard as the real purpose of their subject, the following question was sent to a number of representative geographers both in the United States and Europe:

What, in your opinion, are the three most important problems that need solution, or the three most important lines of investigation that need to be followed, in the subject of geography?

In all, 39 replies were received to the letter. In the analysis which follows, however, only 29 answers are considered, representing the English-speaking countries. Of these replies 25 are American and 4 British.[1]

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[1] Since, at the time of writing, only three replies had been received from continental Europe, it seemed best to restrict the analysis to the replies from Great Britain and the United States, representing the English-speaking countries. Seven American geographers acknowledged the letter, but did not answer the question; three giving as their reason inability to answer it; three could not give sufficient time for adequate answer; and one refused to answer because he regarded the investigation of little value. Of the 29 geographers repre-

That among these geographers, at least, there is nearly unanimous agreement as to what geography is, the replies clearly show. With but two or three exceptions, the letters substantially state, or imply by the line of investigations suggested, that geography concerns itself with the study of the relationship between earth and life, particularly human life. There is considerable difference of opinion as to just what lines of investigation should be followed, but almost general agreement that the aim of geographic work of whatever kind is to establish the facts of, and deduce the principles underlying, this relationship between the physical earth and its inhabiting organisms. The spirit of most of the letters is, perhaps, summed up in the statement by A. P. Brigham "that the real goal and heart of our science is in the field of human geography. Physical geography is a large, but not the largest, part of the subject. It only contributes to the deeper and wider aims that most justify geography in claiming the place of a science among sister bodies of truth." It is significant that only two of those replying gave a problem in pure physical geography as most important, and one of these two problems is suggested avowedly as an aid to the geographer in his work of interpreting life responses to physical features.

Some difficulty has been experienced in analyzing the answers for the reason that several replies have given large, general problems while others have given a specific, definite thing to be done. Some have merely stated the problems they regard as most fundamental; others have given reasons for the opinions expressed. In the analysis, the attempt has been made to group the replies under general headings, putting together, so far as possible, those suggestions that have a similarity of purpose, that look toward the solution of the same general problem, even though the specific problems suggested may be quite diverse. Of the problems sug-

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sented in the analysis, 17 are university or college professors of geography, 3 normal school professors, 5 editors of geographical publications, 2 explorers, 2 government scientists.

Those who answered the question were: Chas. C. Adams, University of Illinois; Cyrus C. Adams, Editor, *Bull. Amer. Geogr. Society*; W. W. Atwood, Harvard University; H. H. Barrows, University of Chicago; Isaiah Bowman, Yale University; A. P. Brigham, Colgate University; R. M. Brown, Rhode Island Normal School; H. G. Bryant, Geographical Society of Philadelphia; Col. C. F. Close, Director-General, Ordnance Survey of Great Britain; R. E. Dodge, Columbia University; Chas. R. Dryer; F. V. Emerson, Louisiana State University; N. M. Fenneman, University of Cincinnati; Henry Gannett, Geographer, U. S. Geological Survey; G. H. Grosvenor, Director, National Geographic Society; H. E. Gregory, Yale University; Geo. D. Hubbard, Oberlin College; Ellsworth Huntington, Yale University; Mark Jefferson, Ypsilanti (Mich.) State Normal School; W. L G. Joerg, Assistant Editor, *Bull. Amer. Geogr. Soc.*; J. Scott Keltie, Royal Geographical Society; L. W. Lyde, University College, London; A. G. Ogilvie, Oxford University; R. E. Peary; R. D. Salisbury, University of Chicago; J. R. Smith, University of Pennsylvania; W. S. Tower, University of Chicago; F. R. Waldo, Geographical Society of Philadelphia; R. H. Whitbeck, University of Wisconsin.

gested in the replies, the greatest number regarded as most important:

The Exact Determination of the Influence of Geographic Environment. Of the 29 replies, 22 stated this to be one of the chief problems facing the modern geographer or implied by their answers that this was the chief problem to the solution of which specific investigations should lead. ''This is, and will long be, the crux of the geographer's problem,'' says A. P. Brigham. ''We must not merely understand the more apparent responses that man makes and has made to natural conditions, to heat and cold, aridity and moisture, to land form, to the sea, to environing organisms—we must also seek ultimate influences, deep, remote, ancient, tangled as they may be, whatever apparent hopelessness the maze of obscure conditions and unsolved enigmas may oppose to our attempt.'' Here comes the need of special geographic training, for, continues Professor Brigham, ''There is much loose writing on the influence of environment. Results are assigned to one cause where there are several or many possible causes. Factors lie buried under our ignorance at every turn. To know the origins and development of human culture, to grasp the various sciences of man as interpreted by the principles of modern biology, will lay some of the stepping-stones by which the geographer must toil up to surer standing-ground and to a more rational definition of the science than we yet have.''

''It devolves upon the geographers,'' says Charles R. Dryer, ''to show how the inorganic world and the organisms that live in it influence and react upon one another'' and the investigations of the geographer should lead to this end. ''The working out of life relations to earth factors,'' F. V. Emerson thinks is the most important problem, although ''in America this seems rather overshadowed by technical work in physiography, due, doubtless, to the fact that most of the departments of geography have originated in, and are closely associated with, the departments of geology.'' R. H. Whitbeck says that the question of chief interest to himself is ''to what degree physical environment has been a determining factor in organic evolution.'' As a more definite problem leading to the solution of this, he would have answered, as the second question needing solution: ''What evidence is there that the distinguishing characteristics of the races of mankind are due to geographic environment?'' L. W. Lyde also gives as a most important problem that of ''the historic differentiation of human types.'' ''If we knew the original causes of this differentiation,'' says Professor Lyde, "we should have the key to climatic naturalization, i. e., we should know how to develop at once the vast unoccupied races of the world in their essentially natural lines." J. R. Smith, while giving as the first great need "the study of the exact influence of environment on man," would also reverse the problem and study "man's influence upon the environment, especially in the form of the study of resource destruction." The investigation of the effects of the destruction of trees and forests in historic times he mentions as particularly needing study.

Other replies state more particularly problems of investigation of the influence of geographic environment that should receive attention. Ellsworth Huntington suggests as a most important investigation the determination of "the exact effect which different types of environment produce upon the human system and hence upon human character and activities." "It includes," he says, "such problems as those raised by Boas in his statement that the head form of immigrants changes when they come to America. It includes the problem of tropical diseases and other conditions of health and activity. It includes also the question of how far the character of such a people as the Germans depends upon their location in Europe and upon their climate, rather than upon some innate racial quality which is psychological rather than biological."

In this connection, emphasizing the need of more exact thinking, Professor Huntington believes that a second important line of investigation should be "the statistical analysis of a vast number of commonly accepted statements." As an example selected from many that might be given, he suggests an accurate analysis of the statement that "Britain owes her position in world affairs to her central location." Such an analysis raises important questions, as appears from a rough examination of the figures; for "so far as distance to America is concerned, Spain, Portugal, France and England are essentially on a par. They have a slight advantage over the Netherlands, Germany and Scandinavia, but manifestly this is of no great importance, for the Netherlands and Germany are vastly ahead of Spain and Portugal in the amount of communication with America." As for distance from other European countries, "England by no means has any great advantage." For example, the sum of the distances from each capital of seven of the leading European nations to the capitals of all the others shows that the combined distances from London to the other capitals are greater than from Vienna, Paris, Berlin and the Netherlands. And "when the distance of England by sea from the other countries of Europe is considered, we find that England has still less advantage,'' for an examination of the proximate distances by water from the nearest important port of any one of the countries to the nearest important port in each of the others shows that the distance from France by water to eight other European countries is 2,300 miles; from Spain, 9,000 miles; from Russia, 9,800 miles; from Germany, 10,000 miles; from Austria, 10,700 miles; from the Netherlands, 10,700 miles; from Britain, 11,200 miles; from Scandinavia, 11,700 miles; from Italy, 13,800 miles. ''In relation to other continents the same thing is true, for France is nearer than either England, Germany, or the Netherlands to Africa, Asia, and Australia, and is equally near to North and South America. Hence, if mere position were the factor of primary importance, it would seem as if France ought to hold the position which is actually held by Britain.''

Wallace W. Atwood suggests an investigation of ''how modern industrial development is being influenced by geographic conditions'' as being the most promising in the study of geographic influences. This is, he says, ''a world-wide problem which brings our attention to the present day, and it seems to me that it is quite appropriate for geographers to be giving more and more attention to the present.''

Several replies give climatic investigations as the most important in answering the question of geographic control, but most of those who mention climatic influence mention it as but one means towards the solution of the general problem of physiographic influence. Mark Jefferson thinks ''there is most need of investigation of the distribution of man over the earth and the explanation of the facts observed.'' This leads immediately, he says, ''into the investigation of the facts of climate as probably most significant in the control of human occupation of the earth and least understood at present among all large factors.'' Henry Gannett says that the most important geographic subject is ''the climatic changes now going on, or which have been going on in recent times, their effects on man, his migrations and his physical and mental characteristics.''

H. E. Gregory is in agreement with Mark Jefferson in giving as the chief problem of geography ''the distribution of the present population of the world, in general and in detail, and the causes of that distribution.'' Professor Gregory gives as a second important problem ''the evaluation of the geographic factor in history as supplementary to, and corrective of, written documents.'' A means by which such a problem may be solved is given by Isaiah

Bowman, in his suggestion as a most important line of research the "study of new frontier societies." He says, "One of the greatest opportunities before us is the study of the twentieth-century colonists. To take but one example,—the colonists of the Argentine-Brazilian frontier. There one finds old-world groups set down in a border region where they are subjected to the influences of a new environment and contact with people of a distinct type, yet enjoying many of the advantages of settled societies. The part they play in the national life, the degree to which they become modified by new influences and how they help modify the original peoples in their adopted country are questions of vital interest in geography. For a long time historical geology made but slight advances because man observed only the results of the past, paying far too little attention to the key offered by present processes. Geographers may contribute in the same way to the next great advance in history by the thorough interpretation of new peoples in a frontier environment."

A large majority of the replies emphasize geographic influence in its human aspects. Three answers, however, point out the need of investigations in animal and plant geography. H. H. Barrows mentions as one of the four most pressing needs investigations particularly in animal geography, "a field in which very little has been done." Charles C. Adams, disavowing in his answer any attempt to state the most important problems, gives as "worthy of immediate investigation, on account of the present exceptional opportunities, the invasion of animals upon new land surfaces and a study of the controls involved in this, as in glacial cirques with the retreat of glaciers; in an invasion upon volcanic débris; with the evaporation of Salton Sea; and following earthquakes and large land slides."

Prof. Lyde emphasizes the need of solving the problems of plant geography as far as concerns "the relative value of the various controls in the production of our great staples, *e. g.* maize." "Much time and trouble and money," he says, "are wasted because we do not know precisely what are the really valuable or vital factors. *E. g.,* exactly how little direct relation is there between actual temperature and yield, and exactly how much between actual rainfall and yield? If we knew we should be able to economize effort and to increase returns to an almost unlimited extent."

Regional Studies. Eleven replies place investigations in regional geography among the most important. "What is most needed," says Isaiah Bowman, "is intensive field work in well-selected regions. This means repeated return of the investigator to his chosen region until he has gained an intimate knowledge of its people and their environment and is in a position to become ther interpreter to the world.'' ''Intensive studies in regional geography,'' says W. S. Tower, ''represent a fundamental line of endeavor for the future welfare of geography as a whole. That I should place first among all the lines of investigation to be followed. The chief reason for that belief is that, by so doing, there would be made available not only much needed new material, but also at the same time there would be provided the basis for comparative studies of different regions.'' ''Complete geographic interpretations of selected areas,'' says H. H. Barrows, ''based both on field and laboratory work, would serve as type studies and help materially to standardize methods of investigation and of writing.''

Regional study involves the division of the world into natural regions, according to several. In the words of Charles R. Dryer, ''Environments must be studied scientifically, by the same methods as plant and animal communities are studied. However complex they may be, they must be analyzed and classified according to the totality of their characters. In this sense a natural environment must possess not only substantial uniformity, but also continuity in space. Here the special work of the geographer comes in and consists in the delimitation and mapping of the habitable earth into natural regions. This is necessary as a working scheme, however distant its standardization may be.'' This having been done, a second great problem for geographic investigation, says Professor Dryer, is to determine ''the actual and possible economic functions of every region of the earth.''

This same need is voiced by Alan G. Ogilvie, who says, ''The main object of geography is the description of the earth. The most satisfactory method of attaining this object is the systematic description of natural regions. . . . This regional description should be causal and explanatory; and the evolutionary idea must be kept clearly in view. The geographical unit is to be regarded as a complex of which the various elements, *e. g.*, landform, vegetation, race, have reached certain points in their evolution.'' However, continues Mr. Ogilvie, ''before a reasoned description of a region can be attempted, the land must be adequately mapped and investigations must be made in various branches of science, *e. g.*, geology, meteorology, botany. At the present time men engaged on those sciences have not been able to spend sufficient time to satisfy the geographer upon what may be called the borderlands of their sciences. It is therefore advisable for the present that every geographer, in addition to his main descriptive work, should adopt some subject for special work or research, such as surveying and cartography, physiography, climatology, plant ecology, ethnology, or, in the case of geographers studying coastal regions, oceanography. In course of time these subjects ought to occupy a sufficient number of specialists. But even so, there will still be room for the geographer, who will continue to make use of the material provided by the specialists, and so work towards his description of the whole earth. When that is completed the changes brought about by civilization will probably furnish him with quite enough matter for his work."

J. Scott Keltie emphasizes this same need of regional study. The business of the scientific geographer "is to study the great features of the earth's surface in adequate detail and to investigate the influence of these features, including climate and hydrographical conditions, on the distribution of other factors on the earth's surface, and especially of humanity." Little has been done in this field, Dr. Keltie claims, even in those areas which have been adequately mapped and explored. "This," he concludes, "is a department of geographical work which might be carried on indefinitely and which has important practical bearings on the activities of the human race."

Speaking from the standpoint of American geography, four replies give North America or the United States as the region needing study. W. L. G. Joerg says: "In my opinion our greatest need is a systematic geography of the United States or, preferably, of North America, along modern lines, similar in scope to Mackinder's *Britain and the British Seas,* Partsch's *Mitteleuropa* and Vidal de la Blache's *La France: Tableau Géographique.* It should, of course, embrace all phases of the subject, both physical and human, and be sufficiently detailed to bring out all essentials. At present we have no such works in English. Those available are either out of date or ungeographical in point of view, or, where this is not the case, do not present all phases of the subject. For a distinctly geographical treatment of the topic we must turn to foreign sources, such as Ratzel's *Die Vereinigten Staaten von Nord Amerika* or Reclus's *Les États Unis.* However excellent such works may be, they cannot but lack the native investigator's sympathetic intimacy with the subject. The wealth of available material, too—especially in government and other official reports—

is a direct incentive to a synthetic treatment. A corollary desideratum is an atlas representing critically all phases of the geography of the United States or, again preferably, of North America, similar in scope to the official *Atlas of Canada,* Bartholomew's *Survey Atlas of Scotland,* or the Finnish Geographical Society's *Atlas de Finlande.* A need related to the first is a systematic geography of the outlying dependencies of the United States similar in scope to *Das Deutsche Kolonialreich,* edited by Hans Meyer. A. H. Brooks's *Geography and Geology of Alaska* is an admirable beginning.''

R. E. Dodge and George D. Hubbard suggest a systematic study of the geography of each of the physical divisions of the United States. This should show, says Professor Dodge, ''the relationship of climate, surface, drainage, economics and the present and past social conditions; that is, each unit should be studied as a unit area, regardless of state lines, in such a way that in the course of time we may have a series of monographs descriptive of the several natural regions of our own country, that will be authoritative and scientific.'' The geographic work for each division, says Dr. Hubbard, should ''stand as high in geography as Bailey Willis's *Northern Appalachians* and other papers of that class stand in physiography.''

''Not all geographers,'' says Professor Brigham, ''appreciate the universal value of apparently commonplace facts of geography at their own doors. . . . Here the Germans have a large lesson for us, in the innumerable monographs relating to the population, industry, agriculture, commerce, history, evolution of culture and types of culture, in small areas of the Fatherland. This is not said in the spirit of criticism, for Germany is small and the workers are many. America is vast and the workers are few. Such special work in limited areas will afford also a vast body of immediately practical knowledge, and there is no reason why geography should not, like chemistry or physics, try to make itself as useful as possible to the common man and to every man.''

Definition and Organization of Geographic Material. This need is placed among the most pressing problems by eight. The first and most important problem in geography, as distinguished from a line of investigation, says Dr. Tower, ''is to remove completely the differences of opinion as to where the discussion of a geographic topic should begin and end. I find constantly evidences of nothing definite in the way of limitations on the sort of matter which may be labeled geographic. Until some general agreement is reached in this matter it must remain difficult, if not impossible, to attain anything approaching systematic organization of the subject." Secondly, continues Dr. Tower, "the problem of correlation and systematic presentation of the subject matter of geography requires attention. There is a tremendous mass of material already accumulated along different lines of the subject, much of which material is still entirely unorganized. For example, in economic geography, an enormous body of facts is easily available for discussion of one sort or another, but so far there has been no really satisfactory organization of those facts into a logical, scientific presentation of that phase of geography. As a result, we have many facts to talk about, but little in the way of principles which have been deduced from these facts."

Colonel C. F. Close is of essentially the same opinion. He says, "The most important problem is the definition of the subject itself. When we talk about chemistry, geology or astronomy we have a clear idea of the scope of these sciences, but when we talk of geography we find there is no general agreement as to its scope and we cannot even say if it is a science. There is the greatest divergence of opinion as to what geography is. Thus, I believe I am right in saying that Prof. W. M. Davis defines geography as 'modern geology,' Dr. Keltie says that geography is 'the study of the earth as the home of man,' Dr. Mill defines geography as the science which investigates the influence of the irregularities of the surface features on the mobile distribution, and I think I remember having heard Mr. Mackinder remark that 'Geography is not a science but an attitude.' This want of definiteness is a serious drawback and it has, indeed, militated against the acceptance of geography in certain universities as a subject fit to rank as a definite compartment of organized knowledge. It is, I am inclined to think, not yet, as a fact, an organized branch of knowledge. But in saying this I would in no way depreciate the admirable work done by the geographical societies. They have the great merit of covering a very wide field of interest and of introducing the earth-sciences to each other. These earth-sciences are geology, geophysics, geodesy, climatology, and meteorology and oceanography, and to those we must add exploration, surveying and cartography, which are not sciences but auxiliary arts. To the group of earth-sciences we may also add ethnography, sociology and political science as subjects which find a welcome in geographical circles. It is the note of a science that it not only accumulates records of fact but advances the thinking power of humanity by means of generalization. Every true science has its generalizations and its best energies are spent in pursuit of them. Without them the masses of accumulated facts are unusable. I believe that at present geography has no generalization, it has discovered no general laws or relationship.'' Having settled what geography is, continues Colonel Close, the second need ''is a really scientific aim, keeping in mind the fact that a science worthy of the name must aim at the discovery of general laws.''

R. E. Dodge states the problem as ''the organization of the principles of human geography in such a way that these principles could be used by geographers, anthropologists and historians, as well as economists and perhaps sociologists in the border lands between geography and these other sciences''; H. H. Barrows as ''the collection, organization and interpretation of the widely scattered facts of geography.'' Mark Jefferson says, ''in general the greatest tasks of all are still the ascertainment of all possible facts of geography'' and the putting of them ''into groups and relationships admitting simple statements qualified by statement of the width of applicability to which they are entitled.'' N. M. Fenneman gives as one problem ''to collect, tabulate and plot the essential facts relating to human life . . . to enable the trained student, at least, to obtain the necessary data of his thinking with less wasteful effort than is now necessary'' and, as another, ''the study and formulation of those general principles of control (if there be such) which relate the facts of human life to the physical features of the earth.'' ''I have in mind here,'' he says, ''not so much the study of individual states and communities but the philosophic study of principles, which, of course, presupposes the study of individual cases. In other words, I feel that geography, like any other science, must culminate in a philosophical aspect and that without such philosophical side or culmination, the study will continue to be, as was said of it a few years ago, 'dead at the top'.''

Improvement of Geographical Education. This is mentioned as a most important problem in geography by eight out of the twenty-nine replies. It includes the establishment of geographical courses in universities, the improvement of text-books and apparatus, the training of teachers, the general spread of geographic knowledge among the people.

Richard E. Dodge states the problem thus: ''The better organization and promotion of geography in our colleges, universities and normal schools, not only for the benefit of the students thereof, but for the teachers of geography in secondary and elementary schools, in order that geography may be a working field of knowledge appreciated by the on-coming generation and used by them to a fuller extent than it is now.''

Professor Brigham states the problem as related to the training of geographers in the universities: ''This involves,'' he says, ''the establishment of chairs of geography in greater measure distinct from geology, and should lead to a broader and deeper discipline of special scholarship.''

Isaiah Bowman says the great need is in the training of normal school teachers. ''Distinct progress has been made in the establishment of geography in the universities. The subject is bound to have wider recognition if its research work is properly advanced. The better text-books of to-day have also greatly elevated elementary instruction. The weakest link in the chain is the normal school. One cannot view, except with the greatest distress, the existing state of affairs. Normal-school teachers of geography should be the product of the universities. It ought to be illegal for a teacher to conduct classes of students through the principles of the subject without having had advanced instruction in university or college courses. Here is a vital 'problem that needs solution.' How can we get the fact established that expert teachers of geography are absolutely necessary in normal and high schools? We are letting the blind lead the blind. Furthermore, a teacher should be inspiring. Recently a normal-school teacher said to me: 'I like to teach drawing, but how I hate geography.' The geography taught in the sixth grade was all that some of her students had had up to the time they entered the normal school. How they too must have hated geography! When one thinks of the possibilities of the subject, its almost universal human appeal when adequately taught, its fundamental relation to history and anthropology, and its disciplinary value, one is appalled to find it presented by wholly untrained teachers, out of sympathy with its spirit and blind to its treasures.''

Henry G. Bryant says that geographical instruction in America needs to be improved ''that it may eventually receive the same recognition here that it now obtains among the institutions of learning in Europe.''

R. M. Brown not only further emphasizes the need of improved teachers and geographic apparatus in high and elementary schools, but says there should be a ''distinct effort to bring the gist of geography to the busy man as well as the untutored.'' This latter need is given first place among geographic problems by Gilbert H.

Grosvenor, who also pleads for better teaching in the schools. George D. Hubbard adds to the need of expanding college geographic teaching that of "the development of distinctly geographic work and issuance of geographic publications by state surveys" and "more thorough recognition of geographic phases of the work of the various government bureaus, such as the Census, Weather Bureau, Department of Agriculture, Consular Service, etc."

"The one great problem," says Cyrus C. Adams, "relates to the co-operation of geographers and geographical societies to raise the standard of geographical education in this country." "There is no reason," continues Mr. Adams, "why we should not work out a revolution in the position of geographical education in this country, such as the United Kingdom has achieved in the past thirty years. . . . The influence of the work we should take in hand will ultimately filter through to the common schools. We shall have a demand for better appliances of all kinds and the improvement will be noteworthy in the newspaper and the encyclopedic treatment of the subject and confer other boons which our country sorely needs. Japan places in the hands of her common people better maps than we produce; we are inferior in such appliances to all the countries of Europe excepting Spain and Portugal, and Scott Keltie in his recent *History of Geography* singled out our country as notable for the inferiority of its non-official map products."

Geographic Factor in History. Six replies regard historical problems among the most important. This problem might well be regarded as a part of the first, namely, the determination of the exact value of geographic influences, but here applied to past events. "What we need," says Ellsworth Huntington, "is not to say that there is a relation, but to take specific areas and carefully work out the exact facts—expressed in numbers, if possible—which illustrate the connection of their history with their geography. For example, take such a state as Kentucky. One of the primary facts in its history seems to be its changing relation to three areas: (1) Virginia and the neighboring states in the early days when the main route to Kentucky was through the Cumberland Pass; (2) its relation to the South in the days when steamboats made the Mississippi a great trade route, and when the profitable raising of cotton created a demand for foodstuffs in the slave-owning states; (3) its relation to the great manufacturing states of the northeast and to the main trunk lines of railway which run north of it and not through it at the present time. If the geographers could take problems like this and could work out the detailed statistics for a large number of relationships we should soon find that as a matter of course geography and history were regarded as going together in just the way that chemistry and physics are regarded."

"By the application of geographic methods and principles to history," says C. R. Dryer, "geographers, by extending help to the historians, would pay off a long score of indebtedness, strengthen the credit of their science and form an alliance which would contribute to the mutual advantage of geography and history."

Herbert E. Gregory would have geography solve the problem of "the history of man in regions where there are no written records and therefore where the only method of solution is geography," and Gilbert H. Grosvenor would apply this method of solution in "the study of ancient civilization in America." "This problem," he thinks, "will be solved not by an archeologist but by some able geographer who appreciates the problem from a broad geographic point of view."

Wallace W. Atwood also would have investigated "the influence of geography upon American history," for "studies in this field are enlarging our appreciation of the significance of geography and proving of great significance in the interpretation of history."

W. S. Tower, regarding as one of the chief needs of geographic investigation "the field where history and geography come into contact," thinks that "it is a line of research which is, perhaps, less likely to be developed as much as is desirable" because "in order to prosecute this investigation, the person engaged must be a highly trained man, both in history and geography."

Exploration should still be considered one of the great things requiring the attention of the geographer, six of the replies indicate. J. Scott Keltie places it as the most important. He says: "There still remains a very great amount of pioneer exploring work to be done. In South America there is probably a million square miles practically unexplored and much more that has been explored and mapped in a very imperfect and provisional form. Even in Canada there are still considerable areas that are practically unmapped. Africa may be said to have been explored and mapped provisionally so far as its leading features are concerned, but except in South Africa, in Egypt, in Algeria, to some extent in Tunis, in the Sudan and in portions of the British, German and French possessions in Central Africa, there is still a vast amount to be done before the continent is accurately mapped and its great features known in adequate detail. In Asia, Arabia to a large extent still awaits the pioneer, and in Central Asia, Tibet and the regions around, there is still ample opportunity for the work of the pioneer, while in China, the Malay Peninsula and even in Persia, what mapping there is is mainly of a provisional character. As for the oceans only a fraction of them may be said to have been adequately investigated.''

Alan G. Ogilvie thinks the important thing is re-exploration, rather than initial exploration. He says, ''The amount of initial exploration which remains to be done is now small. What I will call re-exploration will become of the first importance and it should be undertaken by geographers with a sound general training and a natural geographical sense. Moreover, they must work hand in hand with the specialists, by assisting them to collaborate, and so supply their materials for the regional description in the most suitable form.''

''Research in new lands,'' as given by George D. Hubbard, is evidently equivalent to Mr. Ogilvie's re-exploration. ''The intertropical American lands,'' says Dr. Hubbard, ''are probably our best openings aside from our own colonial possessions. They are not much occupied, unclaimed geographically, and but little known as to resources or topography; yet they are of growing importance to us as sources of raw materials, foods and markets.'' F. V. Emerson also regards exploration of our own continent as very important.

Robert E. Peary regards as the three things most needed: ''(1) The geographical survey and scientific study of the entire circumference of the Antarctic Continent. (2) The establishment at the South Pole, and at Cape Columbia, less than 500 miles from the North Pole, of stations for a year of continuous systematic observations simultaneous with those at permanently occupied stations in America, Europe, and Asia. (3) The completion of the exploration of the unknown Arctic region between the Pole and Bering Strait, which MacMillan and Stefansson are at work on from this side, and which the Russians began on the Asiatic side by Captain Vilkitzky's discoveries north of Cape Chelyuskin last year.''

Henry G. Bryant gives as two of the three important problems the investigation (1) of the large unknown area in the Arctic Ocean ''with a view of determining the extent of the continental shelf, depth of ocean floor, force and direction of drift currents, and the existence or non-existence of land masses in the area referred to'' and (2) ''the continued systematic investigation of the Antarctic Continent.''

Physical Geography. Only two replies give distinctly physiographic problems. W. W. Atwood sees a need for investigating ''the physiographic history of the western Cordilleran Province of North America, a wonderful geographic province, which has as yet been studied in widely separated localities. The relationship of the various sub-provinces to the history of the province as a whole, opens one of the largest problems in physical geography on this continent, a problem distinct from any of the large problems in physical geography which have thus far been worked out.''

N. M. Fenneman gives as a problem in physical geography, ''To perfect and put into use as quickly as possible a genetic classification of land forms. This implies that regions already known should be described in those terms for the use of geographers and that other regions not so known should be studied in that light. The object of this would be to give the geographer good mental pictures with one-tenth of the reading now necessary.''

Other Problems. Among other problems mentioned are: by H. H. Barrows, ''the development of more effective methods of geographic description and interpretation''; by F. V. Emerson, ''the development of common terms and concepts, *i. e.,* an increase and clearness of the terms used so that both writing and thinking shall be clearer''; by Mark Jefferson, ''adequate expression of what is learned''; by L. W. Lyde, ''the problem of correlating climatic phenomena, *e. g.,* the absence of ice in the Weddell Sea or off Spitzbergen to the subsequent failure of the Nile flood or the wet monsoons of India.''